

REMARKS

Further and favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

Entry of the amendments is proper under 37 CFR §1.116, because the amendments place the application in condition for allowance and do not raise any new issue requiring further search and/or consideration. The amendments are necessary and were not earlier presented, because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

Claims 10-12, 14 and 16-28 were pending in this application when examined.

Claim 11 has been amended to recite a needle crystal “having a hollow structural portion”. As a result, claim 12 has been cancelled.

Claims 10 and 17 have also been cancelled, without prejudice or disclaimer.

Claims 14 and 16 have been amended to depend from claim 11.

Claim 18 has also been amended to recite a needle crystal “having a hollow structural portion”, and to recite “wherein the amount of the C₆₀ platinum derivative to be added is in the range of 1-10 mass % for the C₆₀ fullerene molecules”. Support for this further amendment can be found on page 7, lines 16-23 of the specification.

Claims 19-21 have been amended to depend from claim 18.

Claim 25 has been amended to recite “an irradiation of an electron beam with high energy of 100 keV or higher at room temperature”. Although the basis for such amendment may not be literally recited in the present specification, in Example 3 of the present specification, the needle crystal was irradiated with an electron beam at room temperature. Accordingly, one of ordinary skill in the art would recognize that Applicants had possession of the method of claim 25 at the time the application was filed.

I. Claim Rejections Under 35 U.S.C. § 103

The Examiner rejects claims 10-12, 14 and 16-24 under 35 U.S.C. § 103(a) as being unpatentable over Miyazawa et al. (US 2002/0192143) in view of Fagan et al.; and rejects claims 25-28 under 35 U.S.C. § 103(a) as being unpatentable over Miyazawa et al. and Fagan et al., as applied to claims 17 and 18, and further in view of Sakurabayashi et al. (US 7,291,318). As applied to the amended claims, Applicants respectfully traverse the rejections.

A. Claims 11, 14, 16 and 18-21

The Examiner asserts that “Substitution of the derivatives of Fagan for the fullerenes taught by Miyazawa is an obvious expedient, the articulated rationale being that it would appear to be application of a known method (Miyazawa’s liquid-liquid interface precipitation method) to a known product/composition (the fullerene derivative of Fagan), ready for improvement (note the suggestion of improving properties by adding dopants/fullerenes) to yield predictable results” (see Office Action page 5, lines 1-6). Applicants respectfully disagree.

Claims 11 and 18 recite a needle crystal “having a hollow structural portion”, and claim 18 further recites that “the amount of the C₆₀ platinum derivative to be added is in the range of 1-10 mass % for the C₆₀ fullerene molecules”.

In the present invention, the C₆₀ platinum derivative is added for the morphology change of the needle crystal (to an amorphous structure) rather than to improve the properties of the needle crystal. Furthermore, a needle crystal “having a hollow structural portion” cannot be obtained when the amount of the C₆₀ platinum derivative to be added is less than 1 mass %.

Although Miyazawa suggests that different fullerenes can be added to the needle (see paragraph [0111]), and that dopants can be added to improve properties of the needle (see paragraphs [0141]–[0143]), as noted by the Examiner, Miyazawa does not disclose or suggest that the C₆₀ platinum derivative can be added to change the morphology of the needle.

Thus, one of ordinary skill in the art would not have been motivated to combine the teachings of the references. Furthermore, the references do not teach or suggest the amount of the C₆₀ platinum derivative required to obtain a single needle crystal “having a hollow structural portion” is “1-10 mass %”, as recited in claim 18.

Therefore, claims 11 and 18 would not have been obvious over the references.

Claims 14, 16 and 19-21 depend from claim 11 or 18, and thus also would not have been obvious over the references.

B. Claims 22-24

The Examiner asserts that Miyazawa teaches in paragraphs [0022] and [0023] amorphous structures (see Office Action page 5, lines 12 and 13). However, Miyazawa does not teach a C₆₀ fullerene needle comprising an “amorphous structure”, even though the reference mentions needle-like single crystals or needle-like polycrystals. Moreover, the reference fails to disclose or suggest “nanometer-sized particles of platinum are dispersed thereon”, as recited in claim 22.

As discussed above, one of ordinary skill in the art would not have been motivated to combine Miyazawa with Fagan to arrive at the presently claimed invention.

Therefore, claim 22 would not have been obvious over Miyazawa and Fagan.

Claims 23 and 24 depend from claim 22, and thus also would not have been obvious over the references.

C. Claims 25-28

The Examiner applies Sakurabayashi to rejection claim 25. The Examiner asserts that “One would be motivated to employ such a treatment for any number of reasons, for example making nanotubes from ‘hybrid structures’ which appear to encompass the fullerene wires of Miyazawa” (see Office Action page 6, lines 2-4).

Sakurabayashi teaches forming interior tubes from assembled fullerenes by irradiating an electron beam for hybrid structures. In this regard, the electron beam irradiation is performed on the CNT hybrid structures that are in a **heated state**, because a recovery from the damage caused by the electron beams is faster than in the case where the electron beam irradiation is performed at room temperature (see col. 5, lines 27-49 of the reference).

On the other hand, in the present invention, electron beam irradiation is performed to form an amorphous structure rather than to form interior tubes. Thus, one of ordinary skill in the art would not have been motivated to combine the teachings of the references.

In addition, in the method of claim 25, the electron beam irradiation is performed at “room temperature”. Because enough thermal energy cannot be obtained at room temperature, the damage caused by the electron beam is prevented from recovering, and the amorphous structure is maintained.

Therefore, claim 25 would not have been obvious over the references.

Claims 26-28 depend from claim 25, and thus also would not have been obvious over the references.

Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

II. Conclusion

For these reasons, Applicants take the position that the presently claimed invention is clearly patentable over the applied references.

Therefore, in view of the foregoing amendments and remarks, it is submitted that the rejections set forth by the Examiner have been overcome, and that the application is in condition for allowance. Such allowance is solicited.

Respectfully submitted,

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